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THE FINE AND INDUSTRIAL ARTS IN ELEMENTARY SCHOOLS, GRADE VIII

WALTER SARGENT
The University of Chicago

The increased maturity of children in Grade VIII should bring ability to sketch rapidly things which they wish to describe, with a surer delineation of the proportions, position, and structure, to select with little hesitation the lines which express individual characteristics, and to appreciate and enjoy representing things that are beautiful in form and color.

In constructive work the previous familiarity with tools and processes should make possible the planning and completion of objects which are of practical value, for example, furniture, clothing, etc. Aesthetic appreciation should show itself in a preference for things which are in good taste, such as well-designed objects, harmonious color, and good examples of pictorial art, not simply because the children have been told what is good, but because that which is good gives the greater pleasure.

The following suggestions relate to phases of the arts which seem especially worth emphasizing in Grade VIII.

Representation.—The common use of drawing as a means of explanation and description should continue to be an important part of the work. Facility in this conversational use of drawing does not come from slowly and carefully finished work. It is gained only by practice in rapid sketching. On the other hand rapid descriptive drawing tends to become superficial unless supplemented by some serious and painstaking representation. Memory and imaginative drawing should also receive considera-

tion as ability in this line is necessary to ready expression of ideas.

Children in this grade should have opportunity for much use of these three modes of representation, especially in connection with subjects which call definitely for one or another of these means of interpretation. For example, incidental blackboard descriptions or sketch notes in connection with arithmetic, geography, or history are often of little value unless they can be made quickly with a few strokes. Children frequently lack power to make such sketches because it is sometimes mistakenly supposed that practice in slowly finished work will give this ability. Facility with this sort of graphic expression should not be left to chance, but should constitute a definite aim. Nature-study, physics, and constructive work, on the other hand, demand truthful representation of form, a clear understanding of details of structure, and accurate records of observation which cannot be hastily sketched or adequately shown by a few strokes of the pencil. The children appreciate the needs of the case in hand and can be led readily to adopt the style of drawing which suits the occasion. Rapid sketching is learned only by sketching rapidly, ability in exact delineation comes only by making exact representations, and facility in expressing ideas out of one's head is developed only through drawing from memory and imagination. The one sort of undifferentiated drawing from objects which so often constitutes the larger part of the special work in drawing will not produce that facility in all three lines which is so valuable an asset.

In any line of graphic expression, whether it be rapid sketching or accurate delineation, the children should learn to draw by selecting the most expressive lines which are usually the long lines, and drawing these in right relation and using them to reckon from in adding details.

The practice suggested for Grades VI and VII of drawing typical solids from imagination till one can build them up by indicating correctly the main constructive lines, and conforming the others to these, develops ability to *construct graphically*, which is indispensable to good drawing.

Children readily learn to discover the few lines which show position and structure and by means of these to determine the directions of others and thus find the solution of an otherwise complex problem. They thus learn to draw objects as if they were building actual things.

For example in drawing a chair, the structural lines suggested in Grade VI for a box give a means of reducing to system and

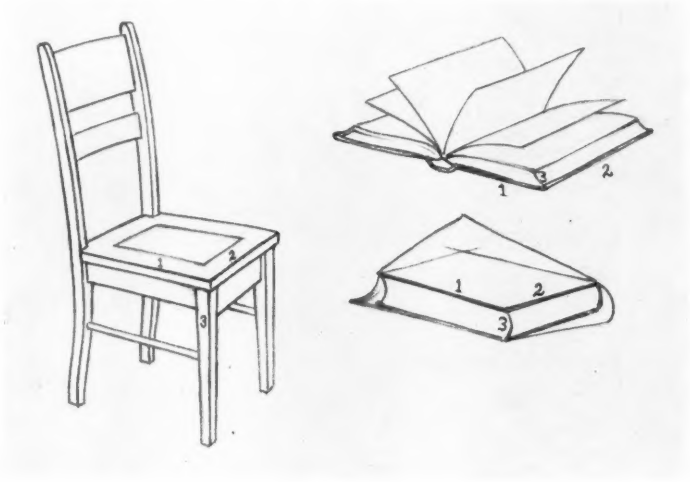

FIG. 1

representing easily the many lines which if unrelated would prove confusing (Fig. 1). The lines marked 1, 2, and 3 furnish the key to the direction of most of the others. If these are determined in the right proportion and at the right angles, the general structure may easily be completed. All slants extending upward to the left are determined by 1, and all to the right by 2.

The closed book in Fig. 1 represents an outline frequently drawn by children and within this outline the correct appearance arrived at by drawing lines to correspond with the key lines, 1, 2, and 3.

This does not mean that all the slants are parallel to 1 or 2.

The lines converge as they extend away from the observer, but when some facility in representing rectangular objects in different positions has been gained and the eye grows accustomed to interpreting drawings, *it will be found that the attempt to make the shapes look right results in an approximation to the proper convergence.* This method of approach differs from perspective taught by vanishing points and reference to the level of the eye, in that it is based upon an increasing reliance on the testimony of the eye regarding impressions supplied to it directly from the object and not upon an intellectual ability to compute results from external facts. Such computations are valuable as a means of checking up results after the visual perceptions can be depended upon, but it is doubtful if these conditions can be fully attained below the high school.

The same general principles hold regarding the representation of curvilinear objects, such as a glass or a bowl. The question most full of descriptive suggestion is not, "How far below the level of the eye is this glass?" but, "How far can one see into it?" The line answering this question establishes the curve which determines all related circles.

The different phases of nature-drawing suggested for Grade VII are of still greater value in Grade VIII. Silhouette representation with brush, of the growth and character of the plant develops freedom and cultivates appreciation of the style and individuality of the plant. Careful detailed drawings directly aid nature-study and develop a habit of accurate observation. If rightly directed, such drawing as this not only does not hinder aesthetic expression but furnishes some of the most valuable training in that direction. Drawing which never deals at first hand with conscientious study of facts is likely and, except in the case of a genius, almost certain to degenerate into stylistic conventions which soon become tiresome, and although they may be original are seldom worth originating. An occasional close study of the facts of nature often furnishes new poetical suggestions and fresh interpretations.

In this grade children can usually be interested in consecutive work upon a single topic such as horses, houses, boats, vehicles,

etc., or a country in connection with geography or an incident in literature or history, or some subject involving poetic interest, such as autumn, spring, morning, etc. Fig. 2 shows cover and pages from a boy's sketch-book.

FIG. 2

When interest in a topic is awakened, the various methods of drawing are all brought into use naturally. The children make rapid notes for general suggestions and careful studies for data. Their sketch-books become valued possessions full of material which contributes to the subject in hand. Usually the children can be led to add to their own sketches a collection of pictures related to the subject under consideration. These may be gathered from magazines and other sources.

This sort of interest in finding pictorial expression for an idea develops a basis for artistic appreciation. When pupils have become interested in trying to interpret their impressions of autumn into lines and colors and have selected from among autumn pictures those which are most in harmony with their own feelings, they are gaining experience which will help them enter into the spirit of a work of art which is an artist's interpretation of this topic with much more sympathy and responsiveness than as if they had made no effort to express it. The search among many sources, in nature, literature, and art for the embodiment of a particular idea or the expression of a mood should be an important element in all picture-study.

In each grade the pictures studied should be such as embody objects and interests which touch somewhere the experiences of the children. The first pleasure which later may develop into aesthetic appreciation may be awakened by well-drawn, vigorously colored pictures made for children as well as by famous masterpieces.

The following description of an experiment in picture-study in upper grades is reprinted by courtesy of *The School Arts Book*.[1]

> The topic, "Picture-Study," which occurs in most courses in drawing, deserves all the prominence that is now given to it. The majority of people want to be able to appreciate and enjoy works of art. Intelligent enjoyment of art is seldom gained except through special study definitely planned to accomplish that end. To determine what lines that study should follow has been the purpose of much discussion and experimentation.
>
> One method, perhaps the method of least value in elementary schools, is to analyze pictures in order to discover centers of interest, balance of masses, leading lines, etc. This is helpful to adults as a study of one phase of the painter's way of doing things, but unless presented with clear understanding of its relative value it is likely to fail to develop a sincere enjoyment of pictures.
>
> Another method is to show pictures to the children and encourage them to talk about what they see and enjoy. Incidentally, stories of the artist, the times in which he lived, and the things he chose to paint are presented to add historical interests and associations to the pictures. This way gives

[1] "An Experiment in Picture Study," *The School Arts Book*, October, 1909.

pleasant acquaintance with works of art and awakens oftentimes a sincere liking for them.

If one allowed his judgment to be based upon the written papers which are sometimes asked for after lessons in picture-study, he might be led to doubt some aspects of this method, but perhaps the fault is not in the method but in asking too soon that children make a statement in definite terms of language, regarding matters of feeling.

Perhaps instructors who wish to awaken in their pupils true enjoyment of pictures, an enjoyment that is not a passing preference but an abiding pleasure, might find helpful suggestions from considering carefully the familiar statement that one gets from a picture only what he brings to it. It may follow that preparation for seeing a picture should be made before the picture is presented, in order that the children may have something of value to bring to it, and that the teacher's explanations may be unnecessary at the time. It is possible that such enjoyment of art as we wish our pupils to possess can come only when they have been previously interested in the subject which the artist portrays, so when they come to it they come to something which they themselves have tried to express even though crudely and which they rejoice to see set forth skilfully.

The following experiment was tried with a large number of children in Boston in the sixth, seventh, and eighth years of school, in order to observe the results of giving the children experiences which should prepare them to see the pictures which were to be studied.

Twilight was selected as a topic for special observation. The children were encouraged to gather pictures of twilight from magazine illustrations, photographs, and other sources. They were led to observe twilight effects out of doors. The results of these observations were rendered definite by means of notes made with water-color. The colors of the sky, clouds, trees, and buildings on different evenings were recorded. The children noted whether the buildings seen against the sunset sky appeared in their local color or were flooded with the golden glow, or contrasted with it by appearing to be complimentary in hue. The children were enthusiastic in their descriptions of twilight effects and made many sketches, some of which were crude in color while many were soft and delicate.

The next steps in the experiment were made possible by the cordial co-operation of the Museum of Fine Arts which reproduced in half-tone several of its pictures, some of which represented twilight, and made these reproductions available for the schools at cost. About 1,600 of these were bought by the teachers and distributed to the pupils. Each child made two or three simple copies in pencil of the Museum picture given him, reproducing the effect as well as possible by this means. He then experimented by adding to these pencil sketches the different schemes of twilight color which he had recorded. He thus gained intimate acquaintance with an

excellent black and white composition and added to this the color, an element which was the result of his own observation.

After this many of the children wished to visit the Museum in order that they might see the original picture. Those who had opportunity to do so, when they saw for the first time the painting with the composition of which they were already familiar, viewed it with particular attention to see what colors had been used by the artist and how his scheme compared with their own. Usually an art museum appears to a child to be something of a panorama. The previous study of a particular topic, however, served to isolate a few pictures from the mass and make them objects of special attraction. The children felt a fellowship of interest and effort between themselves and the artist.

Even those who did not visit the Museum gained much enjoyment of twilight effects in nature and of descriptions of them in literature.

One principal wrote as follows:

"You will be as pleased as I was myself when I tell you that two of my boys, evidently inspired by our collection of twilight pictures and without any suggestion on my part, brought me two poems bearing upon the theme we were studying in our drawing. One brought in a clipping from a newspaper which told of the ending of the day with the fading of the sunset colors, the night, and the dawning of another day, making application to the closing of a human life in this world and its subsequent awakening in eternity. The other, with the air of a discoverer, laid upon my desk Tennyson's 'Sweet and Low, Wind of the Western Sea.'

"I read these to the class with simply an acknowledgment of the source from which I had obtained them. I was not surprised when boy No. 3 laid Gray's 'Elegy' before me, a day later. I plan to have the class learn this while the strong sidelight of their picture-study is still shining upon it and I see the possibility of other work within the outline for reading, in correlation with drawing."

The possibility of developing other topics in a similar manner is evident. To each great artist some phase of nature has made a particular appeal and it becomes his field for study and interpretation. Perhaps the best way to develop the fullest enjoyment and appreciation of his work is to awaken interests similar to those which inspired his art and to encourage efforts at expression, however crude, of the same thing.

Construction.—Pupils in Grade VIII should have acquired sufficient ability in the use of implements and materials to undertake work, the plans and execution of which involve considerable skill, and which is of such a character that the results are of evident practical value and the workmanship sufficiently excellent to command respect.

Each child who takes woodworking should be able to construct during the year one or two pieces of such articles of furniture as chairs, desks, tables, cabinets, book-racks, etc., which can be put to actual use in the school or at home. If training in previous grades has been thorough and progressive, pupils can undertake individual projects of some importance and enjoy the effort and exercise of skill required to carry them to completion. Such projects undertaken before sufficient command of tools and familiarity with materials and processes have been acquired are generally unsuccessful. While, theoretically, skill may be acquired by means of individual projects from the first, the practical outcome with woodworking classes of reasonable size is that the instructor is unable to give the attention to each pupil which is necessary to the formation of efficient habits. A small proportion of the whole number produce excellent work but the majority make relatively little progress and do not acquire freedom from technical difficulties soon enough to enjoy the results of skill. Figs. 3 and 4 show samples of work by boys of Grade VIII. Objects similar in character were produced by nearly every boy in the school. The time allowed was two hours a week and the classes contained about twenty-four pupils each.

The cooking should develop ability to prepare simple meals and should involve some practice in setting the table in good taste and serving gracefully. Sewing should include making garments which may be worn and some knowledge of design and color as related to dress. Continued attention should be paid to the historical and artistic evolution of whatever industries enter into the school and community life.

Design.—In Grade VIII pupils are sufficiently mature to appreciate to some extent fine forms and harmonious color; to realize the difference between excellence of design which renders an object beautiful and permanently satisfactory, and that sensational or commonplace modification of form and addition of unrelated ornament which contributes nothing toward the perfection of the idea.

The constructive work and domestic science continue to afford some of the most valuable opportunities for design,

FIG. 3

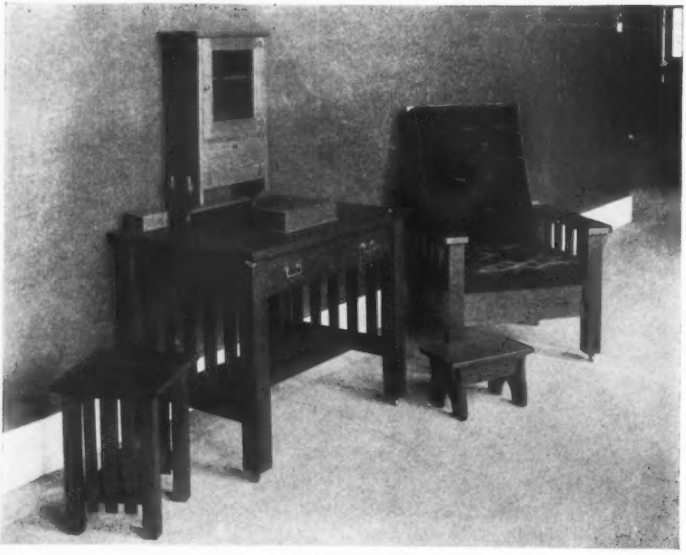

FIG. 4

because they furnish a reason for shapes and materials and an incentive to embody that reason most adequately and gracefully.

Putting into book form the work upon other school topics is a feature of design which is of increasing value each year. It involves the cover design as discussed in the last article, the title-page, margins, arrangement of text, illustrations, tail-pieces, etc. It is not necessary to artistic progress that the children make all their illustrations. The search for and choice of pictures which best embody the idea one wishes illustrated is an excellent means of developing appreciation of art.

One of the most important purposes of design is to develop good aesthetic judgment regarding the things with which one comes into daily contact. Such judgment can be cultivated by choosing the best from among many examples, good and bad, as well as by making original designs. For one who will design a vase or a wall-paper, five thousand will buy the article. It is therefore important to know how to choose well, and designing is not always the surest way of developing discrimination.

This choosing should be from such collections as the pupil will be obliged to make his choice from when he comes to buy for himself, as well as from examples which will always be beyond his reach. For instance if one wishes to cultivate good taste regarding vases, it is well worth while to study those in fine collections, but such study will lose nothing of practical value if it is supplemented by a choice, from among the material available in a local store, of the vase best suited to show the beauty of a particular style of bouquet, such as a few sprays of tall, slender flowers or a round bunch of short-stemmed blossoms.

Lamps are an interesting subject for study, historically and artistically, but added to knowledge of, and interest in, the finest known examples should be some exercise of judgment in choosing the best possible from available sources and this necessitates some concrete acquaintance with these sources. The present generation can thus be led to patronize the best at hand and create a demand for what is still better.

Children should also make or have access to collections of pictures of well-designed dwellings of all classes, public build-

ings for towns similar in size and means to their own locality, and be led to choose wisely among these. They should be encouraged to report on the most beautiful scenes in town. Where cameras are owned by pupils, a collection of local views should be made. A study of one place under various aspects gives results full of interest and artistic suggestion—as, for example, a street scene, or a landscape, at various hours of day and night, and in different seasons. This encourages the sort of study which the artist gives to his chosen subject.

An example of sensible teaching of design is that of a country teacher who found her one-room schoolhouse ill furnished, with no pictures, papers in the windows instead of curtains, an unpleasant wall-color, and poor furniture.

She undertook to change one item after another. The children discussed the best color for the wall. A tone was decided upon and presented to the committee who agreed to retint the room. Curtains were then considered. Samples were obtained and the best color and material decided upon. The children not only were allowed to have a part in the selection but were represented at the purchasing. Chairs, pictures, and frames were later discussed and choices made with the aid of catalogues and visits to stores. The making of the changes occupied two or three years and the money was obtained in part from entertainments given by the children. The artistic training was such that it developed much practical acquaintance with ways of selecting furnishings and incidentally the children developed a sense of ownership in the school. They sometimes inquired of the teacher, after a visitor had gone, whether any remarks had been made regarding the excellent appearance of the room.

Continued use of water-colors should develop increased discernment and enjoyment of colors as they occur in nature. Children in this grade should also become familiar with simple color-harmonies, partly by acquaintance with good examples and partly by experimenting with colors to render them more pleasing in combination.

One can usually secure excellent color-harmonies by choosing with some care among color-prints, particularly those from the

Orient, from fabrics, and often from nature. The groups of colors occurring in lichens, faded leaves, etc., sometimes furnish good material. The children should match these colors and use them in designs.

Simple experiments in harmonizing colors may be tried by introducing a common element into each of a group of two or three colors to bring them into closer relation. For example, two colors like red and blue, which in full intensity are not usually pleasing, can be made more agreeable in combination by mixing a little of each with the other. The red still counts as red and the blue as blue, but the common element has made them less antagonistic. A little gray or some of a third color mixed with each produces a similar result. Children should try such experiments with a number of colors and choose for use in their designs the tones where the proportion of mixture gives the best effect.

By the end of the eighth year children should have gained ability to use drawing as a common means of expression, and to make rapid descriptive sketches, careful, well-constructed drawings, or truthful records of observations, as occasion may require. They should be able to undertake common constructive problems with knowledge of tools and processes, and some ability to convert raw materials into a finished product according to a predetermined idea. They should have taste in choosing what is good among things relating to the home and community and should enjoy beauty of form and harmony of color in nature and in art.

They should have enough acquaintance with what artists have produced to lead them to find some favorites among objects of fine art as they have among books, so that they will desire to possess reproductions of these.

They should also have gained an interest in productive labor sufficient to interpret things to them in terms of the effort and skill required to produce them and should have developed a healthful enjoyment in the exercise of their abilities which will demand for its satisfaction an occupation which adds to the well-being of the community.

RETARDATION STATISTICS OF THREE CHICAGO SCHOOLS

CLARA SCHMITT
Fellow in Education, The University of Chicago

Ayres's *Laggards in Our Schools* has been the means of directing the attention of the educational world to the problem of the progress of pupils through the schools. Ayres's statistics go to show that many children do not advance through the grades at the rate expected of the normal child, that they are then retarded and many of the retarded ones are eliminated before they reach the eighth grade. He defines retardation as "referring to the pupil who is above the normal age for his grade; elimination is the dropping out of pupils upon reaching the age of compulsory attendance without having reached the eighth grade."[1] He gives a table defining the normal ages for the eight grades of the elementary school. "These ages," he says, "have been accepted by common consent as the 'normal ages' for these grades by nearly all schoolmen who have interested themselves in the problem."

Normal Ages of Children in the Grades [2]

First Grade	6 to 8 years
Second Grade	7 to 9 years
Third Grade	8 to 10 years
Fourth Grade	9 to 11 years
Fifth Grade	10 to 12 years
Sixth Grade	11 to 13 years
Seventh Grade	12 to 14 years
Eighth Grade	13 to 15 years

On the basis of this assumption of normal ages there is compiled a table showing the age and grade distribution in Memphis, Tenn., in June, 1908, and the number and percentage of retarded pupils.[3] After the same method he computes the retardation in

[1] P. 8. [2] P. 38. [3] P. 37.

31 cities with resulting percentages ranging from 7.5 per cent for Medford, Mass., to 75.8 per cent for Memphis, Tenn. (colored) and an average of 33.7 per cent children above normal age for their grade.[4]

TABLE SHOWING AGE AND GRADE DISTRIBUTION FOR MEMPHIS, TENN.*

Age	Grade								Total
	1	2	3	4	5	6	7	8	
6	782	11							793
7	699	177	50						932
8	368	403	131	5					907
9	120	349	333	104	8				914
10	44	191	335	264	67	6	1		908
11	21	81	230	302	210	83	9		945
12	12	45	109	229	201	203	77	6	882
13	1	13	43	126	182	245	178	63	851
14	4	6	25	44	85	158	175	130	627
15	1	2	6	10	26	69	92	110	316
16			1	3	8	25	43	73	153
17	1			2	1	1	3	10	18
18					1		1		2
Total	2,053	1,278	1,269	1,089	798	790	579	392	8,248
Above normal age	572	687	749	716	504	498	314	193	4,233
Percentage above normal age	27.8	53.7	59.0	65.7	63.1	63.0	54.2	49.2	51.3

*Ayres, *op. cit.*, p. 37.

The next problem which Ayres attacks is how to determine the number of beginners in a given year. The number in the first grade is composed of the beginners for that year plus the retarded ones who have entered one, two, three, or more years before. Upon making an age distribution of the children in the schools of Medford, Mass., on September 30, 1907, there was found to be little variation between the numbers between the various age groups from seven to twelve inclusive. He concludes, then, that all the children are in school between those ages and an average of the numbers in the six groups will closely approximate the number of beginners.

[4] P. 45.

Rates of progress through the grades is the interesting problem taken up on p. 73. A comparison of slow and rapid pupils in 5 cities shows that the children making slow progress are from six to fourteen times as numerous as those making rapid progress save in one exceptional case where the slow ones are one hundred and twenty-four times as numerous. Of 9,489 pupils of New York City, 5 per cent reached their present grades in 86 per cent of the normal time; 55 per cent in 100 per cent of the normal time, and 40 per cent in 128 per cent of the normal time. From a set of data showing the time required to do the work of four grades in each of 29 cities, Ayres computes the time required by the average child to do the work of eight grades.[5] The average of the items of the data just mentioned gives 4.67 years for the completion of the work of the first four grades. Doubling this figure gives 9.34 years for the time necessary to complete eight grades. To this is added 0.8, the computed difference between the ages of the beginners and of the first grade, making ten years the time necessary to complete eight grades.

In order to test the validity of Mr. Ayres's conclusions and to find out something of the actual situation I made an investigation of 3 schools of Chicago. The conclusions quoted above are only those from Mr. Ayres's book which are comparable with the findings of my own work. I went to each school and made from the principal's register two tables, one showing the age and grade distribution as does the one for Medford, Mass., quoted above, and the other showing the number of weeks spent in each grade by the pupils in that grade. These represent conditions as existing upon the entrance of the child in school on September 1, 1909. In the age columns of each register the age of the child in years and months is recorded at the time of his entrance. In my table the months have been disregarded and the age in years is recorded. A child was counted as six years old if he had passed his sixth and not yet reached his seventh birthday upon entering school in September. Thus the six-year-old group in-

[5] These figures were found by taking the difference between the average ages of the first- and fifth-grade pupils. The normal difference would be four years.

cludes all children between six and seven, the seven-year-old group includes all between seven and eight, etc. The same thing is not true for the five-year-old group. The school law of Illinois allows children to be admitted to school after the sixth birthday, but it is the practice of principals to admit five-year-old children if they will reach the sixth birthday early in the term in which they are admitted. Thus the five-year-old group includes those whose ages are between five years and seven months and six years.

A third mass of data was obtained in the following manner. The 1903 registers for two schools and the 1902 register for the third school were brought out. The names of the children in the first grade of each register were copied and the progress of each child as portrayed by the registers of each succeeding year up to and including that for September, 1909, was traced through. Out of an original total of 511 names only 135 were found still upon the register of the school in which they were found as first graders. This 135, however, forms a beginning of the authentic individual school histories which Thorndike has so often pointed out as necessary before conclusions upon school progress can be reached with accuracy. A second method of getting the same kind of information which will be described later was followed in one of the schools.

One of these schools, which I shall call School A, is situated in the district most highly favored intellectually and financially, short of great wealth, in Chicago. It is attended by the children of teachers and other professional men. School B is situated in a contiguous district inhabited largely by working people of the higher classes, skilled workers and others receiving trade-union wages. So far as the normal physical standard of food, housing, and clothing are concerned there is no difference between the districts. The same may in general be said of the district of School C, except that it contains a large percentage of Negroes. This race constitutes between one-fourth and one-third of the school membership.[6]

[6] Estimated as the lines marched out of the building as the register did not show nationality or race.

Table I shows the age-grade distribution for School A. According to Ayres's definition the numbers above and to the right of the heavy line are retarded. Thus there would be two in the first grade, thirteen in the second, seventeen in the third, and so on. But upon comparing Table I with Table II it will be seen that the number of beginners in September is exactly equal to the number of five- and six-year-old children in the school at that time. One is led to believe, then, that children enter the school before the age of seven. The assumption is further borne out by the statement made by the principal of this

TABLE I

AGE AND GRADE DISTRIBUTION FOR SCHOOL A

GRADE	AGE															TOTAL	PERCENTAGE OF RETARDATION *	PERCENTAGE OF RETARDATION †
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	?			
I	13	100	37	2												152	1.3	25.6
II ..		14	75	40	6	7										142	9.1	37.3
III ..			8	57	30	13	4									121	14.0	49.5
IV...				12	48	47	16	8	5		1					137	21.1	56.2
V....				2	9	31	31	27	19	6	4					129	43.4	67.4
VI ..						11	37	30	23	7	5					113	30.9	57.5
VII..						2	6	29	28	13	9	3	1			91	28.5	59.3
VIII.								6	31	30	16	2	1	1		87	22.9	57.4
Total	13	114	120	115	102	111	94	100	106	56	35	5	2	1		980		

* According to Ayres's age standard.

† According to the more probable standard.

school. He has for several years averaged the ages of the beginners and of the graduates. These averages have always been six plus a small fraction and fifteen plus a small fraction respectively. We must then set six years for the standard for the normal age of the first grade instead of seven as Ayres has done. The double rule of Table I shows the division between the normal and retarded pupils according to this now more probable standard. The first column to the right of the column headed *total* gives the percentage of retardation according to Ayres's standard, the second column gives the retardation according to

the more probable standard. The percentages according to the two standards run as follows:

	Grade							
	I	II	III	IV	V	VI	VII	VIII
Ayres's standard	1.3	9.1	14.0	21.1	43.4	30.9	28.5	22.9
Newer standard	25.6	37.3	49.5	56.4	67.4	57.5	59.3	57.4

The age and grade tables for the schools B and C are not essentially different except that the retardation for the first three grades are higher. The three schools are combined in Table III. In School B the actual number of beginners is 88 and the number of five- and six-year-old children is 79. In School C the actual number of beginners is 125, of five- and six-year-old children, 104. The combined tables, III and IV, show 326 beginners and 296 five- and six-year-old children, making a total discrepancy of 30. This discrepancy is accounted for to some extent by the gaps in the information columns of the registers. Occasionally the age column or the weeks-in-grade column was not filled in. Were it not for this the various corresponding totals of the two sets of tables would be identical. However, a few children do enter school later than six years of age.

TABLE II

SHOWING TIME SPENT IN EACH GRADE UPON ENTERING SCHOOL SEPTEMBER 1, 1909, SCHOOL A. FIGURES BELOW DOUBLE RULE SHOW NUMBER CERTAINLY REPEATING GRADE

Weeks in Grade September, 1909	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	
0 (beginners)	113	75	69	76	67	73	47	45	Possibly normal
0–10	14	20	13	0	1	2	3	0	" "
11–20	11	40	45	55	49	51	40	33	" "
21–30	5	6	1	3	3	0	1	0	" "
31–40	9	12	2	15	16	4	6	6	Repeating grade
41–50	...	2	...	...	...	...	0	...	" "
51–60	...	1	...	...	...	...	4	...	" "
61–70	...	...	...	...	...	...	...	...	" "
71–80	...	...	...	...	2	...	...	...	" "
Total	152	156	130	149	137	130	97	84	
Percentage of repeaters	5.0	9.0	1.5	10.0	13.1	3.0	10.0	7.1	

TABLE III

AGES AND GRADE TABLE FOR THE THREE SCHOOLS COMBINED

GRADE	AGE														TOTAL	PERCENTAGE OF RETARDATION *	PERCENTAGE OF RETARDATION †
	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
I	30	257	163	25	13	3	1			1		1			533	8.2	40.7
II		30	172	103	32	15	9	1			1				362	15.7	44.1
III			29	135	120	48	20	8	2		1				363	24.2	54.8
IV				37	116	132	63	30	26	4	3			1	412	30.8	62.8
V				3	23	93	98	70	55	16	6				364	40.3	67.3
VI					2	47	90	81	66	43	16	1	1		347	36.0	59.9
VII					1	6	29	74	77	46	32	6	2		273	31.5	59.7
VIII							4	29	84	83	53	9	2		264	24.2	55.6
Total	30	287	364	303	407	344	314	293	310	192	111	17	5	1	2,918		

* According to Ayres's standard.

† More probable standard.

TABLE IV

SHOWING LENGTH OF TIME IN GRADE (ENTERING SEPTEMBER, 1909) FOR THE THREE SCHOOLS COMBINED. THOSE BELOW DOUBLE RULE ARE CERTAINLY REPEATING GRADES

WEEKS IN GRADE SEPTEMBER, 1909	GRADE								
	I	II	III	IV	V	VI	VII	VIII	
0 (beginners)	326	172	203	247	168	217	124	133	Possibly normal
0–10	28	57	17	23	4	6	3	...	" "
11–20	43	81	104	92	148	110	98	105	" "
21–30	33	11	10	7	15	1	5	1	" "
31–40	53	38	41	37	37	15	15	20	Repeating grade
41–50	6	10	2	3	...	...	1	...	" "
51–60	4	2	1	...	1	...	4	...	" "
61–70	3	...	...	...	...	...	...	...	" "
71–80	1	...	...	...	...	1	...	...	" "
81–90	2	...	...	...	...	...	...	...	" "
91–100	1	...	...	...	...	...	...	...	" "
151–160	1	...	...	...	...	...	...	...	" "
Total	501	371	378	409	373	350	250*	259	
Percentage of repeaters	14.1	13.4	11.6	9.7	10.1	4.5	8.0	7.7	

* In School B in the seventh grade were 41 pupils whose record as to length of time in grade could not be found. These added to the 250 on record makes a total of 291 in the seventh grade. Had the record of each pupil been full the various totals of the corresponding tables would be the same. All percentages are calculated upon the known figures.

Tables II and IV are made out from the column of the register showing the number of weeks each child had already spent in the grade in which he entered in September, 1909. Table II shows the situation for School A alone, Table IV for the three schools. The registers show in which grade a child is enrolled upon entering school—as Grade 1, 2, 3, etc.—and the number of weeks he has already spent in that grade upon enrolment. They do not show in which half of the grade the pupil is enrolled. Thus if it is shown that a certain individual is in Grade 3 and has spent 20 weeks in that grade upon his enrolment in September, one does not know whether he is beginning the second half of Grade 3 or repeating the first half. If, however, an individual is enrolled in September in a grade in which he has already spent 30 weeks it is almost certain that before he can leave that grade, assuming that he is in the second half, he will have spent 50 weeks in the grade. So far as time in that particular grade is concerned, he is retarded ten weeks, and some time during the 20-week period necessary to complete a half-grade he is a repeater. According to this standard, then, those below the double rule in Tables II and IV are certainly repeaters. It is as certain that some above that line are repeaters. Those in the column marked "0 to 10" are most probably repeating that half of the grade in which they have spent more than 0 weeks and less than 10. Some of those in the column marked "11 to 20" are repeating that half of the grade in which they have spent the time indicated, etc. Therefore the percentage of repeaters shown in the last column of the table is too low. The percentage of known repeaters for the three schools is as follows:

	Grade							
	I	II	III	IV	V	VI	VII	VIII
School A	5.9	9.0	1.5	10.0	13.1	3.0	10.0	7.1
School B	27.0	31.9	19.6	5.1	8.1	8.6	11.3	7.9
School C	8.0	5.3	15.0	11.4	10.0	1.9	4.4	8.0
Combined	14.1	13.4	11.6	9.7	10.1	4.5	8.0	7.7

The register of School A for 1902 contained the names of 120 first-grade children. Of these 23 were still in the school in

September, 1909. In the registers of this school, with the help of the principal, it was possible to find in which half of a grade a child was enrolled upon entering school in any year. The school careers of these 23 children are shown in Table V. The first column indicates the individual pupil in Grade I in 1902, the second column his age in 1902, and the third column the term

TABLE V

SHOWING PROGRESS OF 23 PUPILS WHOSE RECORDS WERE TRACED FROM 1902 TO SEPTEMBER, 1909

Pupils in Grade 1 in 1902	Age 1902	Term Entered	Grade 1903	Grade 1904	Grade 1905	Grade 1906	Grade 1907	Grade 1908	Grade 1909
5^2.....	6	1st, 1902	2^2	3^1	3^1	4^1	5^1	6^1	7^1
6^2.....	7	1st, 1902	2^2	3^1	4^1	4^2	5^2	6^1	6^2
7^2.....	8	1st, 1899	2^2	3^1	4^1	4^2	5^2	6^2	7^1
17^1.....	6	1st, 1902	1^2	2^2	3^1	3^1	4^1	5^1	6^1
25^1.....	6	1st, 1902	2^2	3^2	4^1	5^1	6^1	7^2	8^1
37^2.....	7	1st, 1902	3^1	4^1	..	..	..	7^1	8^1
47^1.....	6	1st, 1902	1^1	2^2	3^1	4^2	5^2	6^2	7^2
51^2.....	7	1st, 1902	2^1	3^1	4^2	5^2	6^1	7^2	8^1
54^1.....	6	1st, 1902	2^2	3^1	4^2	5^2	6^2	7^2	8^1
56^1.....	6	1st, 1901	1^1	..	..	4^2	5^2	6^2	7^2
68^1.....	6	1st, 1902	2^1	2^2	3^1	4^1	5^1	6^1	7^1
70^2.....	6	1st, 1902	2^2	3^2	4^1	5^1	6^1	7^1	7^2
71^2.....	7	Before 1st, 1900	2^2	2^2	3^1	4^1	4^1	4^2	5^2
81^1.....	6	1st, 1902	..	2^1	2^2	..	..	4^2	5^2
87^2.....	6	Before 1st, 1901	2^2	3^2	3^1	4^1	5^1	6^1	7^1
91^1.....	6	1st, 1902	2^1	2^2	3^1	4^1	5^1	6^2	7^2
96^1.....	6	1st, 1902	..	3^2	4^1	..	..	7^1	8^2
100^2.....	6	1st, 1902	2^1	2^1	3^2	..	4^1	4^2	5^2
101^2.....	7	1st, 1902	2^2	3^2	4^1	5^1	5^2	6^2	7^1
105^1.....	6	2d, 1901	2^2	3^1	4^2	5^1	6^1	7^2	8^1
110^1.....	6	1st, 1902	2^1	2^2	3^1	4^2	5^1	6^2	7^2
113^1.....	6	1st, 1902	2^1	2^2	3^2	4^1	5^1	6^1	7^1
116^1.....	6	2d, 1901	2^1	3^1	4^2	5^2	6^2	7^2	8^1

in which he entered school. If *before* is written in this column his standing in school indicated that he had entered school before the time of the earliest record found which is marked in the column. The superior figures 1 and 2 with the pupil's and the grade number indicate in which half he was enrolled upon entering school in any year: 1 means the first half or low fifth, low sixth, etc.; 2 means the second half or high fifth, high sixth, etc. The table, then, is to be interpreted thus: Pupil No. 105 was enrolled in grade low one in 1902, was then six years of age, had entered school the second term of 1901, enrolled in grade

high two in September, 1903, in low three in 1904, in high four in 1905, in low five in 1906, in low six in 1907, in high seven in 1908, and in low eight in 1909. Considering only the time between 1902 and 1909, he has progressed somewhat irregularly but has accomplished the normal amount of work for that time and attained grade low eight. If all the children had progressed normally all would have been registered in grade low eight in September, 1909. They are, however, seen to be registered as follows:

Number in high eight	(8^2) is 1	(accelerated)
Number in low eight	(8^1) is 6	(normal)
Number in high seven	(7^2) is 5	(retarded)
Number in low seven	(7^1) is 6	
Number in high six	(6^2) is 1	
Number in low six	(6^1) is 1	
Number in high five	(5^2) is 3	
Total.....	23	
Percentage of 23 accelerated is 4		
Percentage of 23 normal is 26		
Percentage of 23 retarded is 69*		

* A close examination of the individual records discloses a larger percentage of retardation. Individuals 116 and 105 were retarded in 1902 but were counted normal in the table. No. 51, being in grade 1^2 in September, 1902, should normally be in grade 8^2 in September, 1909.

As the records of the first-grade children of 1903 of Schools B and C were traced and half-grades could not be distinguished, they should all normally be in the seventh grade in September, 1909. Of 180 names from School B, 65, and of 211 names from School C, 47 are still found upon the registers of the respective schools. These 112 are distributed as follows:

Number in Grade Eight	is 10	(accelerated)
Number in Grade Seven	is 26	(normal)
Number in Grade Six	is 42	(retarded)
Number in Grade Five	is 23	
Number in Grade Four	is 9	
Number in Grade Three	is 2	
Total.....	112	

For the three schools combined:

Number accelerated is	11	or 8.1 per cent
Number normal is	32	or 23.7 per cent
Number retarded is	92	or 68.1 per cent
Total.....	135	

With these figures and those for the same items obtained from Table III may be compared the figures from the report for 1907 of the Cincinnati public schools. On p. 79 of this report is an age-grade table for all the pupils in the schools in June, 1907. This table upon its face appears to be upon the same basis as Ayres's table as regards normal ages for grades. But we are told upon p. 78, "The age of all pupils is given at the birthday occurring between November 1, 1906, and November 1, 1907, so that most of the pupils will appear one year older upon this table than they were upon entering school in September." Thus seven appears upon the table as the normal age for the first grade, while in reality most of the children were six when entering it for the first time in September. The table shows that there were 4,992 six years of age or less upon entering in September, and 4,403 who were seven years of age at that time. As no other age group in the table is as large as the six-year group we must conclude that children are in school in Cincinnati at six years of age. The number of accelerated, normal, and retarded children shown by the table and compiled on p. 80 is as follows:

Accelerated	3,697
Normal	12,269
Retarded	22,433
Total	38,399

A comparison of percentages shows:

	Cincinnati	Chicago (3 schools)	Chicago (135 school biographies)
Accelerated	9.6	9.5	8.1
Normal	31.9	34.9	23.7
Retarded	58.4	55.6	68.1

These figures show considerable similarity. Less than one-tenth do the work of the school faster than the expected normal time, about one-third do it in the time expected, and over one-half require one or more years more than the expected time to do it.

At the suggestion of Professor Dearborn a questionnaire, as reproduced below, was given to the children of School B. It was filled out by all of Grades Eight, Seven, Six, and Five present

upon one day and by a section of Grade Four. The object of the experiment was to test the credibility of the method in the way that it would have to be used by an investigator collecting a large mass of statistics. The blank was filled out by 374 children.

Name.....
Age..... Grade.....
At what age did you enter school?.....
How long have you been in each of the following grades?
Low 1st..... High 1st.....
Low 2d..... High 2d.....
Low 3d..... High 3d.....
Low 4th..... High 4th.....
Low 5th..... High 5th.....
Low 6th..... High 6th.....
Low 7th..... High 7th.....
Low 8th..... High 8th.....
What grades, if any, have you skipped?.....
What grades, if any, have you repeated?.....

The blanks were given to the principal with the simple request that they be filled. His method of getting it done is not known. They were returned filled in every conceivable way, and it was found that if any results were to be obtained from them it would be necessary to evaluate them at some other than their face value. Of the 374 blanks returned 132 were answered fully and without contradictions. The remainder were studied carefully and given the most probable evaluation. Often portions of the blank were left unfilled. This may have been mere carelessness on the part of the child or he may have forgotten how much time he had spent in a certain half-grade and so omitted filling that space. These omissions were filled in, in their evaluation, in such a way as would account for the time reported as having been spent in school, i.e., the difference between the age at entering and the present age. Many other small considerations entered in in evaluating the individual blanks which it would be too tedious to discuss and which might not apply to any other similar set.

The blanks were divided into four groups according to the character of school progress shown, the normal group, composed of those who had completed one grade per year of school life;

what I have called the pure accelerated group, those who have skipped one or more half-grades and repeated none; the pure repeaters who have repeated one or more half-grades and skipped none; and the mixed group who have skipped one or more half-grades and repeated one or more half-grades. This grouping is shown in Table VI. Under the head of an interrogation point are those so imperfectly filled that to determine any grouping for them was impossible.

TABLE VI

Grade	Normal	Pure Accelerated	Pure Repeaters	Mixed	?	Total
VIII	7	21	11	31	6	76
VII	27	12	12	21	18	90
VI	27	13	14	25	16	93
V	8	16	9	23	27	83
IV	12	3	6	9	2	32

This shows the number of pupils in each half-grade who have progressed normally, are accelerated without having repeated (pure accelerated), have repeated without skipping (pure repeaters), have both repeated and skipped (mixed).

The most significant item of this table is the column headed *mixed* which shows the large number of irregular careers through the grades, and the comparatively small number in the normal column. The number of half-grades skipped and repeated is shown by grades in Table VII.

TABLE VII

	Skipped	Repeated	Gained	Lost	Number Pupils
Grade VIII	103	68	35	..	70
Grade VII	64	79	..	15	72
Grade VI	75	109	..	34	77
Grade V	62	93	..	31	56
Grade IV	15	38	..	23	30

Our table shows that the eighth grade gained on an average of one-half of a half-grade or one-fourth of a year per pupil: the seventh grade has lost nearly one-tenth of a year; the sixth grade has lost more than one-fourth of a year; the fifth grade

has lost nearly one-fourth of a year; and the fourth grade has lost nearly one-half of a year.[7]

Table VIII shows the number of times each half-grade was repeated by the 305 children whose blanks were evaluated. Table IX shows how many half-grades were skipped by the same children. These show that the grades most repeated are those between the second and the fifth inclusive, those skipped the most are high first, high second, low and high third, and high fourth. The third and the fourth grades appear in both groups, indicating that it is in those grades that the most readjustment takes place.

TABLE VIII

SHOWING NUMBER OF TIMES EACH HALF-GRADE WAS REPEATED BY 305 CHILDREN

Low First	17	High First	15
Low Second	24	High Second	25
Low Third	30	High Third	32
Low Fourth	47	High Fourth	34
Low Fifth	38	High Fifth	36
Low Sixth	19	High Sixth	26
Low Seventh	11	High Seventh	12
Low Eighth	5	High Eighth	4

TABLE IX

SHOWING NUMBER OF TIMES EACH HALF-GRADE WAS SKIPPED BY 305 CHILDREN

Low First	24	High First	39
Low Second	20	High Second	31
Low Third	30	High Third	35
Low Fourth	11	High Fourth	29
Low Fifth	19	High Fifth	19
Low Sixth	18	High Sixth	21
Low Seventh	14	High Seventh	8
Low Eighth	0		

[7] There is an apparent discrepancy between the eighth-grade data of this table and of Table III, which shows 55 per cent. retardation. It is accounted for in the following way: 11 of the 31 mixed pupils repeated more than they skipped and are therefore retarded; 11 from Table VI are pure repeaters, and 8 others of the *mixed* pupils started late and did not skip enough to reach the eighth grade at the normal age. This gives a retardation percentage of 42.8 on 70 pupils; the retardation percentage on the age-grade table for this school is 49.4 on 91 pupils half of whom have graduated and left the school in the interval between the securing of the two sets of data.

From these blanks was obtained an additional item of information as to the time at which children enter school. Of those who answered the question, "At what age did you enter school?" 238 entered at six years of age or less, 50 at seven years, 8 at eight years, and 4 at nine years of age. A number who answered that they had entered at seven years of age or more were adjudged not real beginners, as their blanks showed in each case that less than two weeks of time was spent in the first half of the first grade. These children had most certainly received private instruction and could not be classed as beginners. Superintendent Greenwood of Kansas City, in a criticism of Mr. Ayres's methods, made the statement that children often entered school at seven years of age or more and progressed more rapidly than those entering at six.[8] This may be true for Kansas City where children are not permitted to enter the kindergarten before six. The information gained from our blanks does not indicate that the same may be true for Chicago. These show that the number of half-grades skipped by those entering at seven and now below the eighth grade is 24, half-grades repeated 39, leaving a net loss of 15 half-grades for 50 pupils. Since a large majority of children enter school at six years of age that must be considered the normal age for the first grade, or we are reduced to the alternative of allowing to this majority two years instead of one for the completion of the grade.

The results of this study show that the retardation of our schools is probably much greater than Mr. Ayres's figures show, a thing which Mr. Ayres himself suspected. They also indicate that what we have been calling retardation is not retardation but a course of study unsuited to the powers of the children who pursue it. To say that more than half of our children are backward is certainly to make an anomalous statement. Though there are enough really backward children in our schools for whom special teaching and care are necessary, it would seem that the thing now most important is such study as will result in subject-matter properly adapted to the child's abilities and age.

[8] *Education*, May, 1908.

NATURAL HISTORY IN THE GRADES

OTIS W. CALDWELL
The University of Chicago

V. FIFTH GRADE

In presenting this statement of the work done in the fifth grade, especial recognition should be made of the assistance given by Miss Myrta McClellan, who has taught the nature-study in the Fifth Grade for the greater part of the school year, and to Miss Ada Milam, who is completing the year's work. The lesson outlines that are appended are those used by Miss McClellan, and the pupils' papers are the uncorrected written discussions prepared under Miss Milam's direction.

The nature materials used in this grade are chiefly plants and animals, these being centered largely about the work of the garden. A study is made of the processes involved, the habits of life, and conditions affecting the successful development of plants and animals and control of these conditions. Although the topics included in the grade are here listed under three headings, they are considered in their relations to one another.

1. *Animal life.*—In the preceding grades opportunity has been given for general acquaintance with a few common insects. Using this acquaintance as a basis, the attitude of investigation may be developed by a somewhat detailed study of a stand of bees, their communal life, their structure, the uses made of the parts of the body as in flying, walking, feeding, carrying food, and in protecting themselves against enemies: the honeycomb, its structures and uses, rate at which nectar is made into honey and deposited in honey cells, the kinds of flowers upon which bees are working, in what seasons and on what kinds of days do bees work most; the queen bee, care of eggs, larvae, and the young bees; swarming; enemies of honey-bees. Brief study of bumble bees and reading assignments upon habits of bees. During the two years preceding this year bees were kept in the

University Elementary School and studied by the Fifth Grade. An observation hive, especially well adapted for class or individual study (sold by A. I. Root Co., Medina, Ohio), was kept in the schoolroom for a part of the time. It was so placed that the bees passed in and out through a window, but were always observable from within. The sides and top of the box could be removed and the interior of the hive readily studied.

FIG. 1.—The children are preparing the bees for winter by closing the hive and carrying it into a cool room where it will remain until spring. Some of the children who are afraid of being stung by the bees have covered their heads and hands with cheese cloth.

One or two lessons upon wasps as relatives of the bees are interesting at this point. Include the homes and habits of the "mud-dauber" wasps; the way in which they store food in the cells for the use of their larvae, the lint-cutting habits of some wasps and hornets, a comparison of this lint with wood pulp from which paper is manufactured.

A study is made of the industrial significance of domesticated

plants and animals, including corn, cotton, wheat, horses, cows, cattle, and sheep. The history and improvement of these things are left for the Seventh Grade. In preceding grades considerable work has been done with identification of birds. In this grade a study is made of birds as factors in the life of the community, and of state regulations for bird protection. There are many excellent helps for the teacher upon this topic, among which are: *Useful Birds and Their Protection,* by E. H. Forbush, published by the Massachusetts Board of Agriculture, Boston, Mass.; "The Economic Values of Some Common Illinois Birds," by Alfred O. Gross and Stephen A. Forbes, published in the *Arbor and Bird Day Annual of 1909,* by the Superintendent of Public Instruction, Springfield, Ill.; and chaps. xviii, xix, xx, and xxi in Hodge's *Nature-Study and Life,* published by Ginn & Co.

2. *Plant life.*—In the schoolroom plants are grown in aquaria and pots, and propagation is studied by use of slips and cuttings of geranium, coleus, begonia, wandering-jew, willow, etc. The pupils are instructed in the proper methods of making cuttings. The reasons for retaining two or three leaves, two or three inches of the stem, and the terminal buds are discussed. The relative advantage of pruning away parts of the leaves may be shown by planting some with and some without this pruning and noting the later growth. The cuttings are planted at such a depth that the terminal bud and leaves stand immediately above the sand. They should then be covered by a square of glass so that constant moisture and temperature may be maintained, care being taken to ventilate the plants frequently. In ten days or two weeks the glass may be kept propped up, and a few days thereafter it may be removed permanently. Throughout, frequent examination of one or two plants should be made to study the origin and development of roots. When well rooted, plants should be potted in two-inch pots in rich soil. If properly watered and lighted they may be grown in these pots until the outdoor gardens are ready for planting, when the potted plants furnish excellent material with which to get early results in the garden.

Rusts and insects that are injurious to plants, methods of

prevention, insect galls, and a few observations upon the life-cycle of some insect-producing galls are topics of great interest. Weeds were studied chiefly in connection with seed distribution and the garden. As shown in the appended lesson plans there was an autumn field trip for the collection of seeds of many kinds. Weed seeds were planted and germinated in the school-

FIG. 2

room, and the characteristics noted so that in future garden work this knowledge may be used in proper care of the garden. Structures and agencies of seed distribution were studied in detail, a small inexpensive hand lens proving of much assistance and interest in this connection. The advantage of wide seed distribution, and the relative probability of all seeds developing into mature plants are included. A brief review of the work of the lower grades upon plant structures and how a plant works, serves

as the basis for a study of the plant life-cycle which is completed by a study of the flower as a means of seed formation. The parts of a flower and the function of each part in seed formation, omitting all technical details, are studied. Pollination in different common plants and agencies for securing it are fascinating topics. Reproduction of seed plants furnishes an addition to the series which began in the Second Grade, in which series a study has been made of methods of establishing new living things. This is a most important aspect of nature-study, and the whole series,

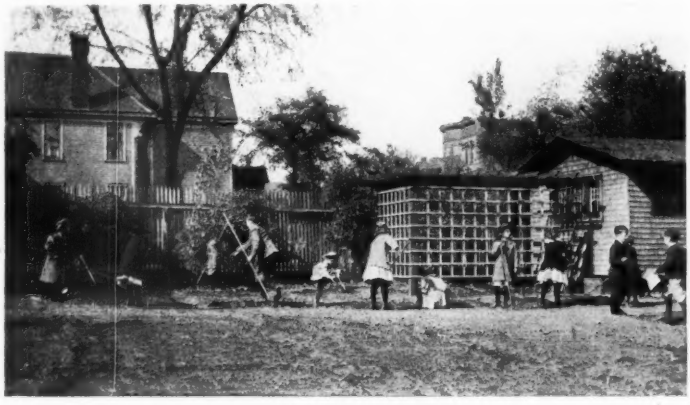

FIG. 3.—Fifth-grade children working in their gardens. Their plans were made before outdoor work began and they are now planting according to these plans. Note also the grape arbor at the left end of the toolhouse. The lattice-work was put on by the fifth-grade pupils.

together with the studies of how individual plants and animals live, should make a good basis for the study of hygiene in the Sixth Grade.

3. *Garden work.*—In the late autumn this grade is assigned to the work of building a "cold frame" in which it is expected that early vegetables and flowering plants will be produced. In spring and summer each pupil has his own garden, makes his own plan subject to the approval of his teacher, does his own planting and cultivation, and owns the results of his work.

Individual ownership and responsibility are essential to pupils of this age. The work is chiefly elementary agriculture and horticulture in continuation of previous garden work and of the indoor studies outlined above.

Use is made of common plants of the home and vegetable garden; also of important plants which are relatively unknown to the pupils, as sugar beets, peanuts, broom-corn, etc. Constant effort is given to secure from each pupil a genuine interest in the habits and needs of the particular plants he is growing, the soil, watering, lighting, and the injurious insects that attack them. A fine quality and quantity of result in flowers, vegetables, or fruit is an appreciable end to the pupil. This is not likely to be secured without care, industry, and study.

The work has proven full of interest and value. It furnishes concrete experience which makes significant the indoor experiments and study upon the structure, water content and water-lifting power of soils, soil replenishment and the relation of leguminous plants to soils. The work of this grade supplies a first-hand basis of interpretation for later work in elementary science, as well as for other subjects of the curriculum.

The following are skeleton outlines of Fifth Grade lesson plans as used by Miss Myrta McClellan of the University Elementary School.

The work of the first two weeks deals with seed distribution. The subject is introduced by a discussion of how in the home the children are cared for until mature, when they go to homes of their own. From this the question is raised as to how plants care for their seeds and how seeds get into new homes. The short time that a mature seed remains with the parent plant is a point for emphasis. There follow discussion and listing the agencies of seed distribution; a field trip for collection of all available kinds of seeds and fruits; this is a Saturday trip and much of the day is given to it; structure of the seeds and fruits studied, experiments with them, and a classification under headings indicating how the pupils think they are distributed; collection of collateral evidence (books and experiences of others) to test correctness of conclusions; learn to recognize different kinds

of seeds by sight; plant seeds in pots, see what ones will germinate at this time of year, note characteristics, record in notes and drawings for future use in garden and outdoor work.

Reproduction of plants by means of cuttings is next considered. Discuss manner in which the children think cuttings must be made. There must be stem, bud, and leaf. Discuss kind of soil for planting; clean sand is best until roots need nourishment. Have each child make a cutting and plant it. Discuss watering, lighting, and covering. Have children develop reasons so far as possible. Working in close quarters in schoolroom will require great care and neatness. Label all work done. Write a story of the cuttings and their treatment. Summarize in one lesson all work done up to date.

During the winter should come a series of lessons upon cattle, beginning with the uses of cattle, milk, cream, butter, cheese, draft animals, plowing, road animals, to propel machinery, for threshing grain, for riding. Use pictures and reading-matter as basis of work. Uses of cattle for beef; parts used, parts most valuable, best types of beef cattle, of dairy cattle; visit stock-yards. Needs of cattle for best growth, regions of largest production of cattle, relation of climate to production of cattle. Disappearance of former cattle ranches as permanent agriculture develops.

Cattle ranges of steppes of Russia, the plains of Australia, the Llanos of the Orinoco, and the pampas of Argentina. Milk cattle and dairy cattle the next topic. Dairy cattle of the U.S., Holland, Canada, Norway, Switzerland, Denmark. Value of their products. Zebu of India as a type of cattle not usually seen in this country. The value of each in the nation to which it is native.

Before leaving the subject of cattle, a brief review. Add a discussion of the tsetse fly as a deadly enemy of cattle and the fact that parts of Africa have no cattle probably because of this.

The horse as a factor in man's work and development of the country the next topic of study. This covered in two lessons as the children are able to use the work on the cow and compare the work on the horse with it in such a way that little additional

time is needed. The horse is more useful to a man merely because of his greater speed.

As a means of ascertaining what the children are getting from the study of birds, Miss Milam, at present fifth-grade teacher in the University Elementary School, asked the children to write a brief paper upon a common bird of economic value. This exercise was unannounced until the time of beginning it, and but a few minutes were allowed for it. Two sample papers are here presented. The papers are exactly as handed in by the children, and while faulty in some ways show some definite results.

MAY 4, 1910. GRADE 5

The robin is a bird of economic value. It is quite a tame bird and is a friend of everyone. The robin was first known in Massachusetts but was brought further south and is now mostly all over the United States. It's appearance is gray and orange. The back is gray and the breast is orange. It is nine inches from the tip of the bill to the tip of the tail. It feeds mostly on angle worms but partly on fruit and grain.

MAY 4, 1910. GRADE 5

One of the birds of economic value is the Robin. He is a friendly bird and does good by eating the harmful insects that eat the vegetables. He goes south every year and returns in the spring builds his nest and lays pretty blue egg and then the little birds hatch out of the eggs learns to fly and it is then time to go home. He has a red breast and a brown back.

The sparrow is another bird but he is not of economic value. He drives the other birds away and takes their food away. He has onley one friend and that is the truck gardner. He stayes here all winter. His breast is grey and his back is brown.

THE DEVELOPMENT OF METHODS IN TEACHING MODERN ELEMENTARY GEOGRAPHY

C. A. PHILLIPS
Warrensburg State Normal School, Warrensburg, Missouri

II. THE DEVELOPMENT OF METHODS IN THE TEACHING OF GEOGRAPHY IN THE UNITED STATES

This discussion will be carried on under the same general heads as those used in connection with European geography. It is to be noted that the progress in the development of method in the United States is slightly behind, in point of time, that in Switzerland and Germany except in industrial and economic geography. In these latter phases of the study the United States has gone on as rapidly as any of the European countries. This of course is due to the intense commercial development of the last few years which has been increasing in intensity throughout the United States.

1. *Place and Book Geography*

Mrs. Earle says:

> Geography was an *accomplishment* rather than a necessary study and was spoken of as a diversion for a winter's evening. Many objections were made that it took the scholar's attention away from ciphering. It was not taught in the elementary schools till this century. Morse's *Geography* was not written till after the Revolution. It had a mean little map of the United States, only a few inches square. On it all the land west of the Mississippi River was called Louisiana and nearly all north of the Ohio River, the Northwest Territory.[17]

We now regard these early geographies as rare curiosities both in matter and form. They were usually 12mo and sometimes as small as 32mo. The information they purport to give is also very often very remarkable. The early ones, up to 1820, were usually bound in full leather; in a few cases wood was used. At first there were only a few maps and illustrations. The divisions of the earth were made by the use of the globe.[18] All these early geographies were fine examples of the place and

book geography. Among the more important ones may be mentioned Morse's *American* first published in 1789, but later in 1793 the work was enlarged to 1,250 pages and published in two volumes under the title, *American Universal Geography*. The third edition was published in 1796 and contained about 1,500 pages. The fourth edition appeared in 1801 and 1802 and was thoroughly revised and contained a good many maps. The fifth edition was published in 1805. In this edition Vol. I has only three maps, the world, North America, and South America. Vol. II has three maps also, Europe, Asia, and Africa. But the preface of this edition says that this defect is to be remedied as it is to be accompanied by a good general atlas drawn by Arrowsmith and Lewis.[19]

The earliest rival of Morse's books was a small volume published by Nathaniel Dwight in 1795 at Hartford. This was a book of questions and answers, from which many interesting bits of information may be obtained; for example:

Q. What curiosities are there in Portugal?

A. There are lakes into which a stone being cast causes a rumbling noise like the noise of an earthquake.

Q. What are the customs and diversions of the Irish?

A. There are a few customs existing in Ireland peculiar to this country. These are their funeral howlings and presenting their corpses in the streets to excite the charity of strangers, their convivial meetings on Sunday and dancing to bagpipes which are usually attended with quarreling.

Q. What curiosities are there in France?

A. A fountain near Grenoble emits a flame which will burn paper, straw, etc., but will not burn gunpowder. Within about eight leagues of the same place is an inaccessible mountain in the form of a pyramid reversed.

Q. What are the characteristics of the Hottentots?

A. They are the most abject of the human race. They besmear their bodies with soot and grease, live upon carrion, old leather shoes, and everything of the most loathsome kind; dress themselves in sheepskins untanned, turning the wool to their flesh in the winter and the other side in the summer. Their dress serves them for their bed at night, for a covering by day, and for a winding-sheet when they die.[20]

The Montor's *Instructor* published in 1804 was another interesting geography. It presents much of the material in verse form. This is a good example:

One river of enormous size,
To west of Mississippi lies,
The river this called Missouri,
And toward southwest its course lies.
This river, from what I can see,
Can't less than the Ohio be.[18]

The prose part is also fully as interesting, for much of it is written in the form of paradoxes of which the following is a good example:

Three men went on a journey in which, though their heads traveled twelve yards farther than their feet, all returned alive with their heads on."

Among the other early American geographies may be mentioned the Davis *Geography* published in 1813 and the Cummings, in 1814. The Adams *Geography* published in 1818 was divided into three parts: (1) "Geography of Orthography"; (2) "Grammar of Geography"; (3) "Description of the Earth." The first four excerpts below are from Part II, the others from Part III.

"A mountain is a vast protuberance of the earth." "Europe is distinguished for its learning, politeness, government, and laws; for the industry of its inhabitants and the temperature of its climate." "The White Mountains are the highest, not only in New Hampshire, but in the United States." "Switzerland is a small romantic country lying upon the Alps and is the highest spot in Europe. St. Gothard is the highest mountain." "Several mineral springs break forth in different parts of the United States. The most celebrated are those of Saratoga and Balls Town in the State of New York. The latter place is much frequented by gay and fashionable people as well as by invalids." "Beer is the common drink of the inhabitants of New York State. The forests abound with bears, wolves, deer and elks." "Many of the towns and plantations in Maine are destitute of any settled minister. Missionaries sent among them have been very affectionately received."[18]

Peter Parley's *Method of Telling about Geography* was published in 1829 at first, and several editions were issued at different times. He also published his *Natural Geography* in 1845. This is thought to be the first American geography to take the flat quarto shape. One rhyme is of peculiar interest and may be found both in his *Method of Telling about Geography* and in *Natural Geography*. The rhyme is as follows:

The world is round and like a ball
Seems swinging in the air;
A sky extends around it all
And stars are shining there.

Water and land upon the face
Of this round world we see;
The land is man's safe dwelling place
But ships sail on the sea.

Two mighty continents there are
And many islands too
And mountains hills and valleys there
With level plains we view.

The ocean, like the broad blue sky,
Extends around the sphere;
While seas and lakes and rivers lie
Unfolded bright and clear.

Around the earth, on every side
Where hills and plains are spread.
The various tribes of men abide,
White, black, and copper-red.

And animals and plants there be
Of various name and form,
And in the bosom of the sea
All sorts of fishes swarm.

Geography goes high and low
To set them forth and show them;
The more attention you bestow
The better will you know them.[20]

The Woodbridge and Willard *Universal Geography* was published in 1824. This is only for advanced students and the most peculiar thing about the volume is the last part by Willard which connects geography and ancient history.[21]

These are all good examples of place and book geographies, and in general they are designed for the higher schools rather than the elementary school. One of the first attempts to put geography in elementary form was made by Morse when he wrote his *Geography Made Easy* in 1800. This was an abridg-

ment of the *American Universal Geography* and ran through many editions. In fact, it seems that it may be fairly claimed that this was the most popular elementary geography of the first half of the nineteenth century. It is a small, leather-bound, 12mo of about four hundred pages. From this little volume many interesting quotations might be made, but a few will have to suffice here. We read as follows:

The Wakon Bird, which probably is of the same species as the Bird of Paradise, received its name from the ideas the Indians have of its superior excellence; the Wakon Bird being in their language, the Bird of the Great Spirit. Its tail is composed of four or five feathers which are three times as long as its body, and which are beautifully shaded with green and purple. It carries this fine length of plumage in the same manner as the peacock does his, but it is not known whether, like him, it ever raises it to an erect position. . . . .

Among reptiles the American crocodile is described as follows:

The alligator or American crocodile is a terrible creature of prodigious strength, activity, and swiftness in the water. They are from six to twenty-four feet in length; their bodies as large as that of a horse, covered with horny plates or scales, said to be impenetrable to a rifle-ball except about the head and four legs. They make a frightful appearance and at certain seasons a most hideous roar, resembling distant thunder. They are oviparous and lay from one to two hundred eggs in a nest. Their principal food is fish, but they devour dogs and hogs. The old feed on the young alligators till they get so large that they cannot make a prey of them. . . . .

The Coach-Whip, Glass and Joint Snakes are great curiosities, the latter, when struck, breaks like a pipe-stem without producing a tincture of blood. . . . .

Columbia College, in the City of New York, is in a flourishing state and has more than one hundred scholars besides medical students. The officers of instruction and immediate government are a President, a Professor of Logic and Geography, a Professor of Languages and a Professor of Mathematics and Natural Philosophy. A complete medical school is annexed to the college and able professors appointed in every branch of that important science, who regularly teach their respective branches with reputation.

In writing about Louisiana, St. Louis is described as

a village of two hundred houses, beautifully situated on the Mississippi, fourteen miles below the Missouri, in latitude 38° 18′ north. Considerable

settlements are made on the banks of the latter river for several hundred miles. This town and its districts contain 5,667 inhabitants.[22]

W. C. Woodbridge, 1794–1845, was mentioned above, but some further detail should be given his work. The *System of Modern Geography* was first published in 1833. Later he revised this in 1853 in collaboration with Mrs. Willard. In the introduction of the first edition he tells about the very bad conditions of geography-teaching in the United States and particularly of the poor textbooks. He had just returned from a visit to Europe where he had visited Pestalozzi in Switzerland and also studied a number of the Pestalozzian schools of Switzerland. During this visit he also spent considerable time with Ritter and Humboldt talking about the problems of geography and finally he had been a teacher in Fellenburg's School at Hofwyl. His thought was to make geography into a science and to this end he published the books mentioned. However, he was not equal to the task as can be readily seen from examination of his textbooks, though it must be confessed that his books represent considerable progress when compared with those of Morse. It is of interest to note some of his directions in the matter of method which may be found under the heading "Remarks to Inexperienced Teachers" in both editions of his textbooks. They are as follows:

1. Let the instructor first ascertain that a student has observed the country around him and is familiar with the points of the compass and the application of common geographical terms.

2. Let the student next draw simple maps beginning with a plan of his table or the room in which he is, proceeding to delineate successively a plan of the house, garden, neighborhood, and town until he has represented with tolerable correctness the relative situations and outlines of the principal objects within his view.

3. When he is prepared to understand the lines and points of a map, require him to become familiar with the definitions of geography and the outlines of continents and oceans as presented by the descriptions and questions of this work (pp. 10 to 19) in connection with the atlas and by the questions which follow the table of contents on the map of the world and the grand divisions. The questions should of course be varied and multiplied by the instructor until each lesson is understood and remembered.

4. At first the questions may be answered with the aid and guidance of the instructor, but the student should endeavor as soon as possible to fix the image of the map in his mind and answer from his recollection of it.

5. Nothing will assist so much in this as drawing maps by the eye. Let him draw on the slate the outline of one country at a time; then insert the rivers and mountains and then the cities; first using the map and finally drawing from memory.

6. As soon as the exercise is familiar let a whole class recite in this manner according to such directions as the following:

Draw the outlines of England.

Write the names of the seas, etc., around it.

Draw the mountains. The rivers. Thames, etc.

Let the instructor inspect the slates. He will thus keep all employed and ascertain the knowledge of each pupil without mistake. This plan has been practiced with great success in many schools. The author has published a set of outlines and skeleton maps under the title of *Geographical Copy Books*. In these the pupil begins by inserting only the cities on the outline map; he then copies the outlines on the skeleton map; and is thus easily led on until he can draw the maps from memory alone.[23]

Among other topics discussed in this same connection with directions are these: "Structure," "Physical Geography," "Civil Geography," "Analysis of the Continents," "Topography," etc.

In general it seems fair to say that the place and book geography was the type which prevailed throughout the United States till after the Civil War, and it is quite probable that it is still much used in some of the remote parts of the country.

2. *Physiographical Geography and Its Human Relations*

We have classified Woodbridge as belonging to the place and book period; however it seems fair to say that he does not represent merely that phase of geography. His textbooks are the best evidences of his broader view, especially in those parts in which he gives the directions quoted above. He was fully aware of the inadequacy of the Morse *Geography* and consciously strove to make his works more valuable, but he was unable to find new principles on which to base his discussions.

Another forerunner of the new geography was Horace Mann, 1796–1859. Mann went to Europe in 1843 to study school systems. His *Seventh Annual Report* gives an account of his travels and his impressions of the schools he visited. During this visit he went to Berlin to see Ritter who was then in the zenith of his teaching-power and influence in Germany.

In describing the geography-teaching Mann says in his report that discrimination must be used, for in some respects he thought the work was imperfect, while in others the teaching was pre-eminently well done. The following quotation indicates in part his attitude.

> The practice seemed to be uniform of beginning with objects perfectly familiar to the child—the schoolhouse with the grounds around it, the home with its yards, or gardens, and the streets leading from the one to the other. First of all, the children were initiated into the ideas of space, without which we can know no more of geography than we can of history without the ideas of time. Mr. Karl Ritter, of Berlin—probably the greatest geographer now living, expressed a decided opinion to me, that this was the true mode of beginning.[24]

The above quotation is important because it tells directly about the practice in geography-teaching in Germany, and it is especially valuable for it serves to connect Mann definitely with the geography of Ritter. It seems quite certain that Mann accepted the theories of Ritter but there is no possible way to estimate the influence of Mann on geography-teaching in the United States.

One other thing reported by Mann is worth some attention, namely, the use of maps in the study of geography.

A large map was suspended on the wall, or sometimes the blackboard was used; if the map was used, the teacher told about the country, tracing the important places on the map, or if the blackboard was used, the teacher drew the map showing the important cities, rivers, mountains, etc. In either case the pupils were required on the following day to reproduce the lesson. Mr. Mann thought this was excellent, in fact, the best geography-teaching he had ever seen. He makes a specific comment that such teaching is vastly superior to the study of a few names of places from some lifeless atlas.

The only adverse criticism is that the Germans study only national geography, but give little attention to universal geography.

We have noted briefly the work of Woodbridge and Mann. In spite of the suggestion of these two writers, physiographical geography in the United States really gets its first great impetus

from Arnold Guyot, 1807–1884, who came to this country in 1848 and settled in Cambridge, Massachusetts. He was thoroughly familiar with the schools of Germany and Switzerland, having taught in them, and was one of Ritter's best students. He had spent four years as a student in the University of Berlin. From 1848 to 1854 he was in the employ of the Massachusetts Board of Education as an inspector and institute lecturer. In 1854 he went to Princeton as professor of geology and physical geography.

His coming marks the beginning of a definite movement away from the old place and book geography to that of the physiographical geography. He was to the United States what Ritter had been to Europe. His theories were those of Ritter, only slightly re-constructed to suit the conditions in the United States. An examination of his first publication, *The Earth and Man* (1849), shows how thoroughly he had adopted the theories of Ritter. His first chapter in this book may be summarized as follows:

1. The forms, the arrangement, and the distribution of the terrestrial masses on the surface of the globe, accidental in appearance, yet reveal a plan which we are enabled to understand by the evolution of history.

2. The continents are made for human societies as the body was made for the soul.

3. Each of the northern or historical continents is peculiarly adapted by its nature to perform a special part corresponding to the wants of humanity in one of the great phases of its history. Thus nature and history, the earth and man stand in the closest relations to each other and form only one grand harmony.[26]

These are all statements of Ritter's *Geography* and one could almost forget that he is reading Guyot and believe these are some statements from Ritter's *Comparative Geography*, so closely does the language follow the statement of Ritter's fundamental principles. This whole book is hardly more than an elaboration of the important teachings of Ritter. In 1868 Guyot published his *Geographical Teaching*. This is a book of methods to put into practice the theories outlined in the *Earth and Man*. Some type lessons are given which are fundamental in their form and content. For example there is a series of "Lessons about Home."

The first of this series is an illustrative lesson on "Physical Forms"; this is a lesson on a neighborhood in western New York. It is in the form of a regular recitation. The pupils are the children of the farmers of the vicinity and the time is summer. A brief section of the lesson is quoted as follows:

TEACHER. I would like all of you to think carefully a moment, and try to remember everything you saw on your way to school. (The pupils are then called upon to tell what they saw).

JOHN. I saw some men mowing in Mr. B's meadow.

CHARLES. I saw a red squirrel running along the fence by the woods.

MARY. I saw some cows and a colt, and two calves and some sheep and lambs, in Mr. G's pasture.

FANNY. I saw some cherries that are turning red in the orchard across the road.

TEACHER. You have remembered several things, and I have no doubt if you should think a little longer you could name many more; but we have as many as we can talk about in one morning. We are going to have a lesson on some of the things you have seen in coming to school. Mary spoke of something she saw in a *pasture*. How many passed pastures in coming to school? (Hands are raised.) Mary, can you tell me what a pasture is?

MARY. It is a field where the cattle, horses, and sheep stay.

TEACHER. Why are they in the pasture?

MARY. We drive them there to eat grass.

TEACHER. Do they need anything but food during the day?

CHILDREN. They want drink, too.

TEACHER. Very well. Where do they find drink?

JAMES. There is a creek in our pasture.

SARAH. There is a spring in ours; etc.[26]

At this point the teacher directs the attention of the class to water forms, and they discuss in some detail, the spring, the creek, the brook, a mill-pond, a river, and a lake. After this the teacher takes up land forms, taking the pasture as the point of departure. They talk about rough land, hills, level land, plains, mountains, and a swamp. At the close a brief summary is made by the pupils, telling the topics brought out in the lesson. The plan suggests that each one of these topics mentioned shall be made the subject for other lessons later on. More than that, the woods, animals, and the relations of the kind of land to the industries of the people are to be made subjects for study.

There can be no question but that this type of lesson represents the best method of study as we have found it in Europe, and furthermore it comes to be the prevailing plan for a larger part of the United States, during the last part of the nineteenth century. Indeed, we do not know anything better yet. It takes up problems within the range of the experience of the child and makes them the starting-point for all geographical knowledge.

It puts the larger emphasis on thinking rather than remembering, in fact, it presents all the best values of the developing method.

A second lesson treats of the "Industries of the Locality." The theory here is that the industries should be studied after the physical geography has been presented. The same conversational plan is used and the homes of the people are first brought up for consideration. This is followed by a discussion of the house, furniture, food, clothing, and the occupations of various men of the community. A good many are farmers, but there is one man who has a sawmill, another a gristmill, one is a blacksmith, one a cabinet-maker, and one keeps a store, etc. The most interesting thing about the lesson is the fact that it is conducted in such a way as to show the interdependence of all these various workers, and at the same time the material of the lesson is kept within the experience of the children. No better plan for the study of the industrial phases of geography has been discovered. Indeed, this is practically the scheme of the teachers who would make the industry the important thing in geography-study. They would start with the industry first, however, and then go to the other problems which are related to the industry in some way.

After a thorough study of the type forms mentioned then Guyot would have the children go on with a study of direction and distance, the globe, continents, and the world.

Guyot published also a series of textbooks which practically failed because there were no teachers to use them, and partly because he as a university professor was not quite familiar enough with elementary-school conditions to bring his material down to the level of the children.

Next to the influence of Guyot, probably should be mentioned

that of Colonel Francis W. Parker, 1837–1902. Perhaps it would be better to say that they were interested in different aspects of geography than to compare them at all. Guyot, was a university professor, profoundly interested in the scientific aspects of geography, while Colonel Parker was the city superintendent and president of a normal school, trying to find suitable material and methods for putting his theories into practice. However, Colonel Parker was no less a follower of Ritter than was Guyot. He had spent three years in Berlin, 1872–75, where the influence of Ritter was still all-powerful under the teaching of his distinguished pupil, Kiepert, who had succeeded him as professor of geography in the university. There seems to be no doubt whatever that Colonel Parker fully accepted the theories of Ritter and Kiepert. More than that, he frequently refers to Guyot and quotes from his works. Some of the students of Colonel Parker who were graduated from the old Cook County Normal, and have distinguished themselves both as students and teachers of geography, report that the first books they had to master when they came to study geography with Colonel Parker were Ritter's *Comparative Geography* and *Geographical Studies*. Another bit of good evidence as to how thoroughly he adopted the principles of Ritter may be found by reading the introduction to *How to Study Geography*.[27] Here we have again the statement of the doctrine that the "earth is the home of man," and all the remainder of the book is taken up in an effort to bring this great truth into realization for the children of the elementary school. This is done by taking up some of the typical problems of geography grade by grade.

Farnham, in his book telling of the Oswego methods in geography, quotes both Ritter and Humboldt and is undoubtedly influenced by Guyot's writing. Professedly, the Oswego movement is under Pestalozzian ideals and in general no doubt this is true. But in the matter of geography the ideals of Ritter are much more predominant than those of Pestalozzi. The reasons assigned for teaching geography give full confirmation of this statement. For example, they are said to be:

(1) To explain the development of man by imparting knowledge of continental structure and climate and their influence upon man mediate and immediate. (3) To explain and illumine history. History is a record of the deeds of the human race. The civilization and progress of a people depend very largely upon the structure and climate of their country. (7) To develop man's reverence for human progress. Study the geography of Holland and the development of agriculture and commerce.[28]

These principles are all clearly related to those we have been discussing of Ritter and Guyot. More than that, it may be fairly said that the whole book treats of the earth as the "home of man," and starts the children into the study of geography with the school, its surrounding, the town, the state, the continent, etc.

The Frye Geography is one of the influential factors of this movement. Alexander Frye was one of Colonel Parker's pupils; in fact, he graduated from the Cook County Normal. His training and no doubt much of his inspiration in the matter of geography came from Colonel Parker. His *Elementary Geography* in particular may be said to follow the subject-matter and method which could be called Ritter and Parker geography.[29]

The McMurray *Special Methods in Geography* also follows in the same general trend, the only difference being a slight leaning toward industrial and economic geography. For example, such topics as these are there emphasized:

(1) Food products and occupations connected with them; (2) building material and trades related; (3) clothing materials used in manufacture; (4) local commerce, roads, bridges, and railroads.[30]

The second chapter takes up synthetic geography, going from the home outward with twenty important topics or types. Chapter iii makes a detailed study of these twenty types. Of course we know that McMurray was a graduate of Jena, and that, in part, may account for his method, for it is very much the German plan with the exception, possibly, of the industrial element.

One has only to glance over the elementary geographies of the Rand McNally series, the Dodge series, the Frye series, Natural series, etc., to see how thoroughly they have all appropriated the principles and methods of Ritter, Guyot, and Parker.

It may be observed, too, that these are the books which in the main represent current practice.

One general observation should be made in discussing American geography as related to European; that is, that the movement in the United States differs from that in Europe in that the historical element does not receive so much emphasis in the United States as it does abroad. The historical element is recognized by both Guyot and Parker but present-day practice virtually recognizes a separate course in history and geography for the elementary school. It seems possible to account for this difference in the fact that while we have all the typical geographical forms they cannot be connected with the great historical movements of the race as they are in Europe. Home geography with us does not include the regions which were the scenes of so many of the world's great historical problems as does home geography in Europe. We connect up only fairly well, too, the historical problems of our national development with the geography involved in them.

3. *Industrial and Economic Geography*

In the foregoing discussion we have called attention to the fact that Guyot, Parker, and McMurray have brought in some of the industrial phases of geography, and several other names might be mentioned in the same connection, but on the whole it is about fair to say that this type of geography is in the theoretical stage, except for a few city systems, normal training schools, and university laboratory schools. The establishment of schools of commerce and chairs of geography in a few American universities has brought out the necessity of doing something to come to a better understanding of our industrial and economic problems. This movement is beginning to reach down into the secondary and elementary schools. And, further, the tremendous commercial tension in the business world is demanding more trained workers to carry on its work. For this reason society is turning to the school and asking it to help solve the problems of industry and commerce.

One of the advanced statements of the idea involved in indus-

trial and economic geography has been made by Dewey, where he says:

> I should say that geography has to do with all those aspects of social life which are concerned with the interaction of the life of man and nature; or, that it has to do with the world considered as the scene of social interaction. . . . . [And again he says] The four stages of geography referred to above, namely, mathematical, physical, political, and commercial, represent then four increasing stages of abstraction in discussing the mutual relation of human life and nature. The beginning must be the commercial geography. I mean by this, that the essence of any geographical fact is the consciousness of two persons, or two groups of persons who are at once separated and connected by the physical environment and that the interest is in seeing how these people are at once kept apart and brought together in their actions by the instrumentality of this physical environment. The ultimate significance of lake, river, mountain, and plain is not physical but social. It is the part which it plays in modifying and functioning human relationship. This evidently involves an extension of the term commercial.[31]

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EDITORIAL NOTES

With this issue the tenth volume of the *Elementary School Teacher* closes. There are three series of articles which will be continued in the next volume, namely the series on natural history by Professor Caldwell, the series on agricultural education by Professor Davis, and the series on history of education by Professor Parker. The series by Professor Sargent is completed in this number and will, after some revision and enlargement, appear in the form of a book.

It will not be out of place for us to comment editorially on these series. Professor Sargent has shown with great detail the importance of systematic sequent work in a sphere of school activity which has suffered because of lack of careful organization. Professor Parker has struck out in a line of historical studies which will contribute new life to the history of education. This history has too often been abstract, dealing only with educational theory. Here is the practical side of school method brought to light in a most suggestive way. The articles on geography by Mr. Phillips may very properly be regarded as part of this series. Mr. Phillips' work grew out of one of Professor Parker's courses. When all of our school subjects are understood in the light of their history, we shall be very much more intelligent in estimating the value of our current reforms.

Professor Davis has brought together a body of information which makes it possible to follow the development of interest in agricultural education in all directions. Those who are introducing courses in agriculture and those who wish to secure material to guide them in the discussion of this subject will find in Professor Davis' papers a summary of the whole movement not available elsewhere. In subsequent papers Professor Davis will focus all these studies of current activities on the problems of the organization of courses for various types of schools.

Professor Caldwell will contribute further numbers to the

series on natural history showing how this subject can be made increasingly systematic in the upper grades. The problem of organizing school studies of nature broadly and at the same time in a fashion to satisfy the demand of preparation for maturer science is one of the most urgent current problems in elementary education. The solution of this problem is rendered the more difficult because the material is so varied in different environments. Professor Caldwell is giving concrete examples and a broad range of suggestions for the use of other special specimens.

This year's issues have emphasized the importance of scientific studies of educational problems. The papers on elimination are among the notable contributions of the journal to the educational literature of the year. Professor Dearborn shows that our schools lose the high-grade students as well as the low, thereby making it clear that mental deficiency is not the cause which explains the withdrawal of children from these schools. Mr. Staples showed that far-reaching social and economic results follow elimination; that later success in life is intimately related to the period of schooling. Miss Schmitt and Professor Thorndike contribute the detail studies of schools which alone will show the exact extent of retardation.

Several of the papers, notably the papers by Mr. Courtis, show the value of minute comparisons of classes and methods. Such papers ought to increase in number, for it is only through such studies that teachers can criticize school work on impersonal, objective grounds.

Doubtless readers of this journal have availed themselves of the guidance of Miss Warren's list of educational articles which appears in every number. If not, special attention should be given to this unique current bibliography of educational discussions. It is hoped that in time this may be expanded so as to indicate briefly what is in the more significant articles. As the list stands now, however, it is worth posting in every principal's office as a means to progress. No teacher can keep alive without reading broadly. Here is a librarian's contribution to the teachers' continued professional study. It is valuable in its immediate function and it is also valuable as an example to those who for

any purpose are interested in the preparation of series of educational readings.

Space does not permit reference to each of the articles. Two general facts must be obvious to every reader. First, the papers all contain facts. We need more explicit accounts of what is going on everywhere in educational institutions. Experience goes to waste in limitless quantities. Anyone who will send facts about his or her work will find here an open forum. Secondly, this journal is not the exponent of any single school. All that is best in the practice and experience of the Elementary School of the University of Chicago will sooner or later find its way into the pages of this journal, but contributions from other schools are earnestly solicited provided only that these contributions set forth in clear perspective actual practices and sifted results. The time for mere inspirational reading in education is over. Facts are what we need. This journal stands for empiricism in education, for clear statement of practices and very little speculation; for systematic, detailed expositions of course of study rather than pious hopes for educational reform.

BOOK REVIEWS

Attention and Interest. A Study in Psychology and Education. By FELIX ARNOLD, PH.D. MacMillan, 1910. Pp. 272.

This book discusses attention from its objective and psychological aspects, interest from the ideal point of view, and education from the standpoint of attention and interest in the schoolroom. The author does not uphold any special theory or school but "attempts to clarify and arrange the many facts that have been brought to light by numerous experiments in the psychological laboratories." A bibliography accompanies the topics treated.

From a methodological viewpoint the exposition of the subject-matter of each chapter is treated under the categories of description, illustration, development, explanation, and definition.

After briefly outlining in general a point of view in psychology the writer discusses the real, the ideal, and the possible. Illustrations are given to show the development of these aspects of experience and an explanation of the "subject-object relationship" is offered. This furnishes the material for discussion in the first chapter.

Attention is defined as "a process of sensori-motor control which tends to increase the clearness and distinctness of the given field." The second chapter treats of the characteristic changes found in (1) clearness and distinctness, (2) persistence, (3) fluctuation, (4) unity, and (5) facilitation and arrest which are conditioned by simplicity or complexity, pleasure-pain, quality of impressions, time, age, preadjustment, reinforcement, practice, fatigue, pause, hunger, obstructed breathing, weak-mindedness, and extraneous stimulation.

All of these topics are treated with brevity and in a few instances upon meager experimental evidence, as, for example, the conclusions on "weak-mindedness" rest entirely upon Reis's experiments on six paralytics, eight hebephreniacs, and two normal subjects. The many interesting and conflicting experiments which have been made on *intensity* in the field of attention are simply dismissed on the basis of being "discussions of a hair-splitting variety."

Under the heading "illustrations" simple tests are given to accompany each of the above-listed phases of the general problem. In "development" there is a gradual change in the field under fixation from indistinctness and obscurity to distinctness and clearness; from childhood and adolescence to adult life there is a gradual increase in sustained attention. The biological and psychological "explanation" of these phenomena is to be found in the effort the organism puts forth "to further the production of distinctness in the essential aspect of any background."

Chap. iii discusses the psychological and chap. iv the physiological phases of attention in more detail. In the former it is assumed that ideas exist as psychic dispositions, since "the impression is lifted into the focus of consciousness and held there by ideal traces and dispositions." There may be

fusion, assimilation, and complication, free ideas or deliberate revival which may or may not be accompanied by intense feelings of strain and effort. Illustrations and simple tests are appended to this chapter and it contains a brief discussion of the development of voluntary attention.

From a physiological standpoint it is noted that there are organic changes in respiration, vasoconstriction, and circulation, while the sensory changes involve accommodation, fixation, and motor diffusion, innervation, control, and fatigue. For an explanation of attention we must study the organic changes which are probably necessary whenever effort becomes localized; the sensory adjustment, which gives fixation and clearness; and the motor attitude, which gives meaning.

Chaps. vi and vii are devoted to interest and chap. viii to a recapitulation. We are urged to look at interest as "an attitude taken toward a situation, and characterized (1) by motor tendencies and feelings of expectation, anticipation, and strain, (2) by meaning implicit in the situation or by free images and ideas, and (3) by a reference of attitude and ideal content to some future condition of the self." The impelling aspect is always due to interest, the controlling to attention.

Part III consists of the final chapters, ix and x, on attention and interest in the schoolroom. These chapters, which contain suggestive material, are least satisfactory on account of the brevity of treatment, the occasional lack of direct correlation with the previous chapters, and the somewhat hortatory manner in which the material is presented. The teacher is too often told what he *should* do without a knowledge of the rational and experimental basis on which the advice is given.

Some of the keynotes of the advice in these chapters are: Each child should be permitted to react toward a situation in a sensori-motor manner. For example, in the primary work in arithmetic the child should be busy measuring desks, books, etc., under the teacher's guidance. Other suggestions for work in arithmetic are given, as well as for teaching spelling, reading, geography, history, nature-study, and grammar.

The instruction and discipline should be arranged in such a manner that whatever the pupil does ends in pleasure. Instinctive tendencies are to be developed into definite interests. The teacher must use positive interests, show signs of approval and disapproval of the child's work, emphasize self-activity, offer opportunities for imitation, make appeals through various senses.

From the teacher's standpoint value would have been added to this book if the author had given more suggestions on how children's interests vary at different stages of growth, how dormant interests may be awakened, and how sustained attention may be developed.

BIRD T. BALDWIN

THE UNIVERSITY OF CHICAGO

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[1] Abbreviations.—Amer. Educa., American Education; Cent., Century Magazine; Educa., Education; Educa. R., Educational Review; El. School T., Elementary School Teacher; Good Housekeep., Good Housekeeping; Journ. of Educa. (Bost.), Journal of Education (Boston); Journ. of Educa. (Lond.), Journal of Education (London); Journ. of Geog., Journal of Geography; Kind-Prim. Mag., The Kindergarten-Primary Magazine; Kind. R., Kindergarten Review; Lib. Journ., Library Journal; Man. Train. Mag., Manual Training Magazine; New Eng. Mag., New England Magazine; Out., Outlook; Pedagog. Sem., Pedagogical Seminary; Pop. Educa., Popular Educator; Relig. Educa., Religious Education; School W., School World; Sci. Amer., Scientific American; Teach. Coll. Rec., Teachers College Record; West. Journ. of Educa., Western Journal of Education.

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